

# Run II Upgrades

---

- Project Tools
  - MS Project, cost accounting, labor tracking
- Status Update (for Feb)
  - Budgeted (work performed / work scheduled)
  - M&S Obligations
  - Milestones
- Specific topics
  - Preview 04 shutdown
  - Preview e-cool, stacktail and 05 shutdown
- V3.0

# Tools and Support

---

## Status

- Still recovering from MSP2000 bug and its aftermath
  - changing to MSP2002 and completing v2.0 cleanup
- Still need to develop necessary project tools ← help is on the way?

## Tools

- status input is working
  - need to improve report generation
  - improve status validation and feedback
- first M&S oblig and cost report generated
  - need to automate integration of cost report and combine with MSP budget estimate
- first effort report next month?
  - need to ...integrate...
- various DOE and Division questions
  - need to automate generation of cost, labor profiles and breakdown...

# Status Report - end of Feb

Status input for end of Feb vs v2.0  
corrected for major RIP (\$2M)

BCWP=\$10.3M, BCWS=\$11.5M  
Variance = \$1.2M, S/P = 89%

WBS	Name	■ BCWS Corrected for \$2MRIP			
		BCWS(Cor)	BCWP	Var(Cor)	P/S(Cor)
1	Total	\$11,534,300	\$10,287,870	(\$1,246,430)	0.89
26	Luminosity Upgrades - Jeff Spalding	\$10,067,523	\$8,752,029	(\$1,315,494)	0.87
26.1	Protons on Pbar Target - Ioanis Kourbanis	\$896,693	\$756,185	(\$140,508)	0.84
26.2	Pbar Acceptance - Steve Werkema	\$953,177	\$891,283	(\$61,894)	0.94
26.3	Pbar Stacking and Cooling - Paul Derwent	\$3,119,766	\$2,768,261	(\$351,505)	0.89
26.4	Tevatron High Luminosity - Vladimir Shiltsev	\$4,459,001	\$3,695,260	(\$763,741)	0.83
26.6	Project Management - Jeff Spalding	\$638,886	\$641,040	\$2,154	1.00
27	Maintenance and Reliability - Paul Czarapata	\$1,466,776	\$1,535,840	\$69,064	1.05
27.1	2003 White Paper/Vulnerability Report	\$845,340	\$914,404	\$69,064	1.08
27.2	Maintenance Improvements	\$593,516	\$593,516	\$0	1.00
27.3	Project Management Oversight	\$27,920	\$27,920	\$0	1.00

Variance  
Drivers:

\$150K parts ...  
e-cool@R  
Fab parts...  
TEL: \$0.5M

# M&S FY04 Obligations (through Feb=0.42FY)

FY04 M&S Obligations through Feb (FY04 \$K)							
from accounting system		Base Estimate	YTD OBL	RIP	Total Obl	BE-TO	TO/BE
<b>26&amp;27</b>		<b>9525.79</b>	<b>1861.04</b>	<b>2068.82</b>	<b>3917.89</b>	<b>5607.90</b>	<b>0.41</b>
<b>26</b>	<b>Luminosity Upgrades</b>	<b>8143.13</b>	<b>1082.35</b>	<b>1983.82</b>	<b>3054.20</b>	<b>5088.93</b>	<b>0.38</b>
20.26.1.1.0	Slip Stacking	416.34	60.21	151.66	211.87	204.47	0.51
20.26.1.2.0	Pbar Target and Sweeping	64.25	11.9741				
20.26.1.3.0	MI Upgrades	0.00					
20.26.2.1.0	Lithium Lens	110.00	15.20		15.20	94.79	0.14
20.26.2.2.0	AP2 and DB	690.72	2.29		2.29	688.43	0.00
20.26.3.3.0	Stacktail Upgrade	1032.11	372.18	360.00	732.18	299.93	0.71
20.26.3.4.0	Recycler*	796.70					
20.26.3.5.0	Electron Cooling	1445.37	181.82	18.02	199.84	1245.53	0.14
20.26.3.6.0	Rapid Transfers	552.04	0.25	30.40	30.65	521.39	0.06
20.26.4.3.0	TEL	154.20	127.35	36.44	163.78	(9.58)	1.06
20.26.4.4.2.0	Separator Polarity Switches	243.64	111.76		111.76	131.87	0.46
20.26.4.4.3.0	Standard Separators	83.78	1.50	10.15	11.65	72.13	0.14
20.26.4.4.4.0	New Separators	0.00	1.81		1.81	(1.81)	
20.26.4.6.X.0	Tev Instrumentation and Controls	30.84			0.00	30.84	0.00
20.26.4.6.4.0	Tevatron BPM	1772.24	30.11	1365.76	1395.87	376.38	0.79
20.26.4.6.5.0	Tevatron IPM	276.99	71.82		71.82	205.17	0.26
20.26.4.6.6.0	B-Field Diagnostics	20.56					
20.26.4.6.9.0	Tev BLM-Abort	257.00		11.40	11.40	245.60	0.04
20.26.4.7.0	Tevatron Vacuum	46.26	0.47		0.47	45.79	0.01
20.26.4.8.0	Tevatron Alignment	180.93	7.30		7.30	173.62	0.04
20.26.6.0	Run II Lum Upgrades Mgmt	0.00	86.30		86.30	(86.30)	
<b>27</b>	<b>Maintenance &amp; Reliability</b>	<b>1382.66</b>	<b>778.69</b>	<b>85.00</b>	<b>863.69</b>	<b>518.97</b>	<b>0.62</b>
20.27.1.1.0	Linac Tubes	462.60	308.53		308.53	154.07	0.67
20.27.1.2.0	Orbump	154.20	0.48		0.48	153.72	0.00
20.27.1.3.0	Booster RF	0.00					
20.27.1.6.0	Transformers	236.44	130.08	85.00	215.08	21.36	0.91
20.27.1.7.0	MI Kicker	5.14					
20.27.1.8.0	Tev Low Beta Magnetics	30.84	24.91		24.91	5.93	0.81
20.27.1.9.0	Tev Centrifugal Cold Compressors	102.80					
20.27.1.11.0	Harmonic Filter Damping Resistors	20.56	22.70		22.70	(2.14)	1.10
20.27.2.1.0	Replace Tevatron Stands	61.68					
20.27.2.2.0	Booster Collimator	308.40	291.99		291.99	16.41	0.95
	Total FY04 Allocation	14039.00					
	Contingency	4513.21	47% of base in FY04 (41% FY04-06)				
	Recycler Dept*	283.00	131		131	152.00	0.46

← oblig/base est = 41%

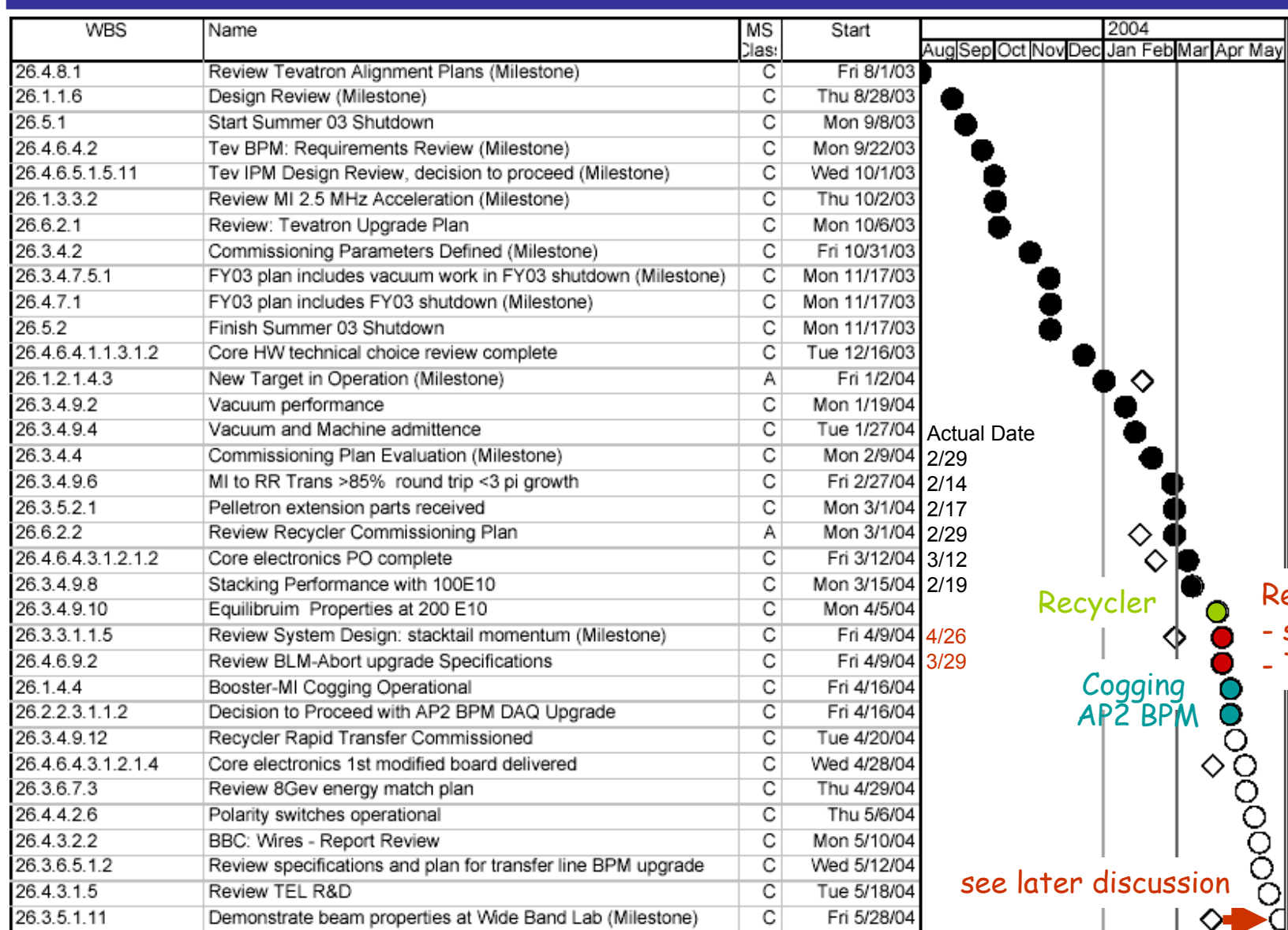
but

est is front-loaded  
expect ~50%  
oblig at this point

65% of M&S is in  
purchases > \$100K


← 41% cont FY04-06

# Milestones



# Maintaining the Plan

---

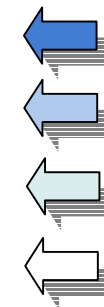
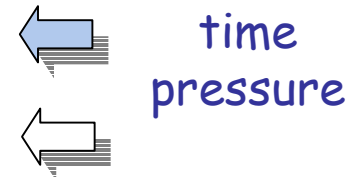
- The plan will continue to develop
    - as explicitly built into the plan via decision points
    - or from operational experience
  - Rebuild 2-4 times per year (via change control)
    - v2.0 is a [major] rebuild - future rebuilds will be more minor
    - all scope/cost/schedule changes presented at Run II PMG
    - change control thresholds require Directorate approval
  - Track status between rebuilds against current version
    - present at Run II PMG
    - done for Aug-Dec vs v1.0
- April-May → v3.0 by June
- 

# Preview shutdown 2004

---

Start: Aug 23, Duration: 13 weeks. Driven by e-cool assuming prep work and some double-shifts.

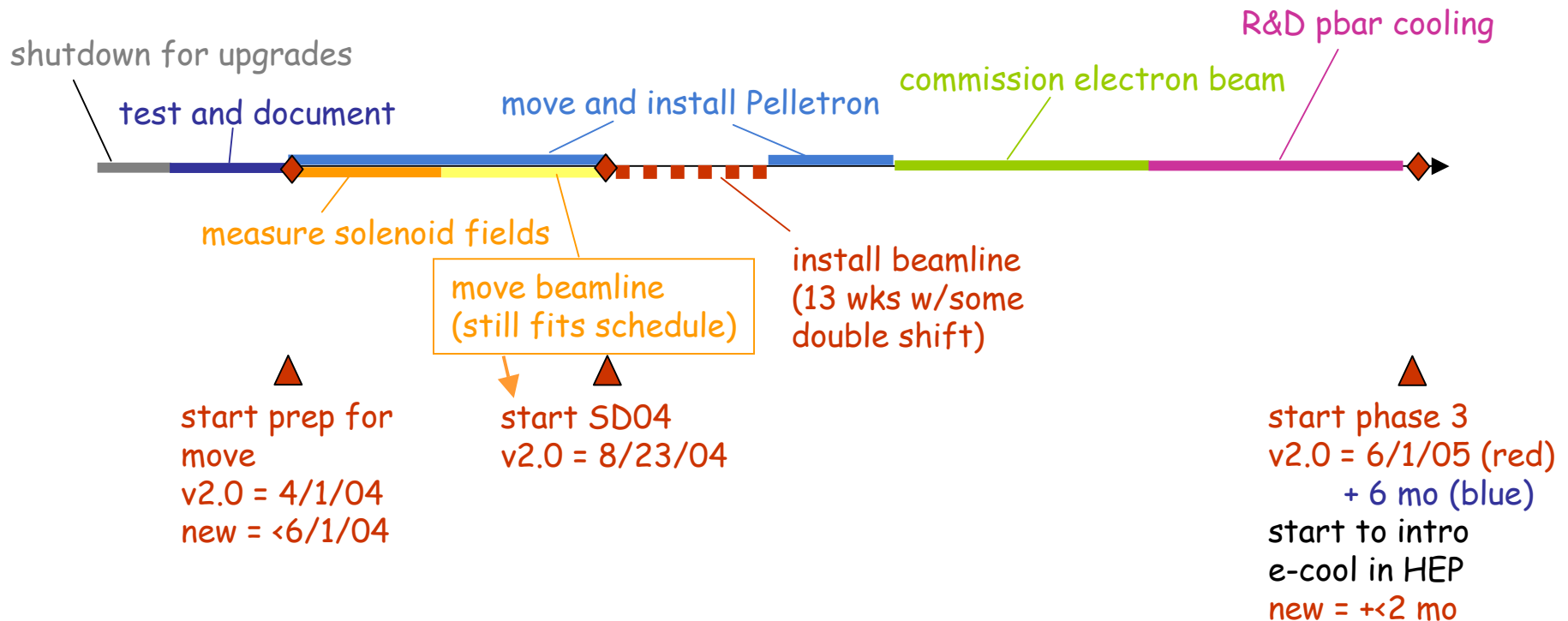
- e-cooling BEAMLINE
- 20 motorized quad stands in DB
- Replace D4Q4
- Move DRF2
- Injection septum common vacuum
- (Extraction kicker vacuum tube)
- Install TEL2
- 4-6 more (standard) separators
- Install IPM
- Alignment level system for low beta quads



→ critical path analysis for SD04 at April PMG

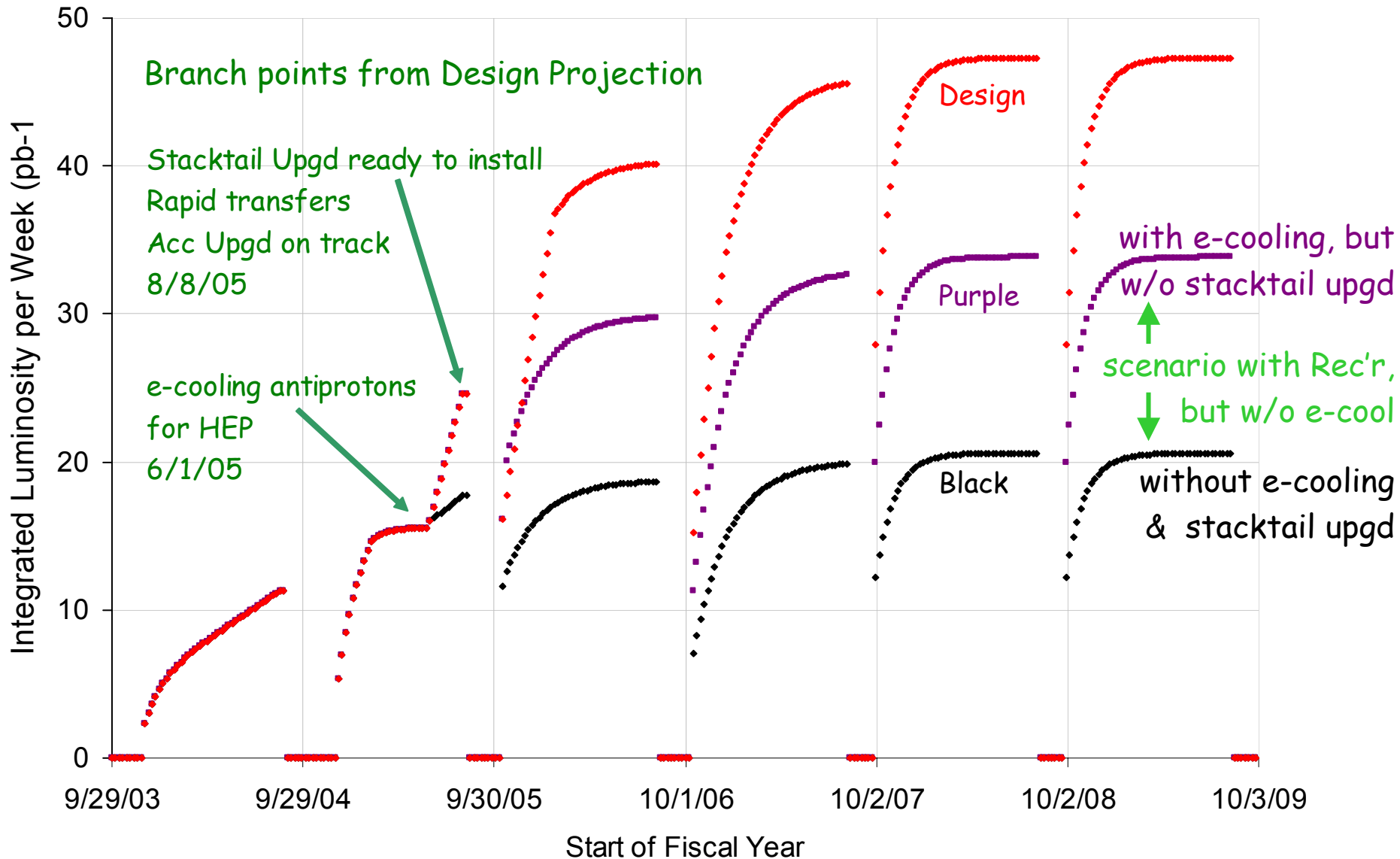
# e-cool sequence WBL→MI-31

- R&D → updated plan based on operating experience
  - new electron gun
  - new return line lattice
  - benchmark optics at 4.3 MeV
  - (more operation for longer periods)
  - improved solenoid field measurement
- Review details April 9, update RLS April-May





# Risk Analysis / Strategy



# Preview shutdown 2005

## Stacktail upgrade

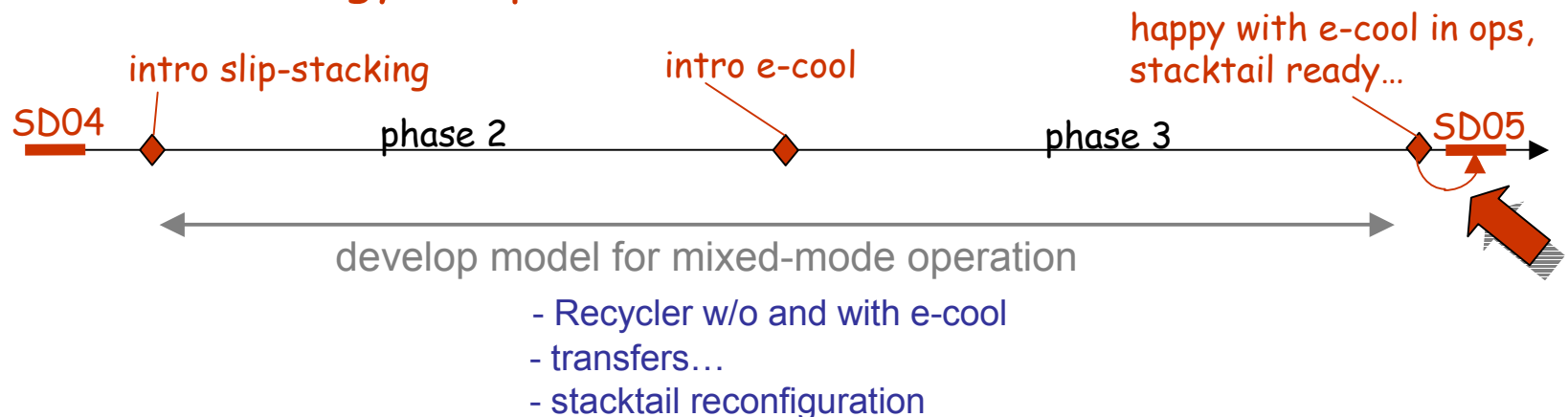
- Mech engineer available 100% by June (NUMI) ← work to minimize the impact
- (Technical review delayed)

→ est. ~2 months variance in completion date

## Stacktail cooling installation (takes 8 wks) drives SD05

- follows the upgrade
- follows successful operation with e-cool

## Review strategy for phase 2→4...



## By June

- v3.0
- re-evaluated use and need for contingency
  - move MI BPM purchase forward?
  - MI BLM upgrade? (~200K?)\*
  - upgrade computers for beam-beam simulations? (\$35K)
    - \*change requests at May PMG?
- develop strategy for phase 2→4